PDS-245-2

Four Bi-Directional Channel Fiber Optic Media Converter

CTF-4G-4TXRX

FEATURES

+ Built around a rugged and high technology readiness level (TRL) quad channel bi-directional transceiver
  - Four copper to fiber transmitters/receivers
  - Four optical to copper transmitters/receivers
+ For use with the DVI interface, has optional receive equalization and transmit pre-emphasis CDR
+ Standard serial interface for built-in test interface
+ For DVI fiber repeating, a single product to convert from copper to fiber and from fiber to copper concurrently
  - Copper DVI input and output channels connect to unit via standard MIL-DTL-38999 connectors and high speed quadrax sockets
  - Fiber DVI input and output channels connect to unit via a standard MIL-DTL-38999 connector with M29504 fiber optic termini sockets
+ 28 V DC power input for low power operation on a standard MIL-DTL-38999 connector
+ Built upon Amphenol low risk and affordable CTF copper to fiber converter product line

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OVERVIEW

The CTF-4G-4TXRX Media Converter is an integrated, standalone, convection cooled, and rugged fiber to copper and copper to fiber converter for use with Gigabit Ethernet, Fiber Channel, Infiniband, Digital Video Interface (DVI), and many other interfaces.

FIBER INTERFACE

The CTF-4G-4TXRX uses industry standard M29504/5 fiber termini.

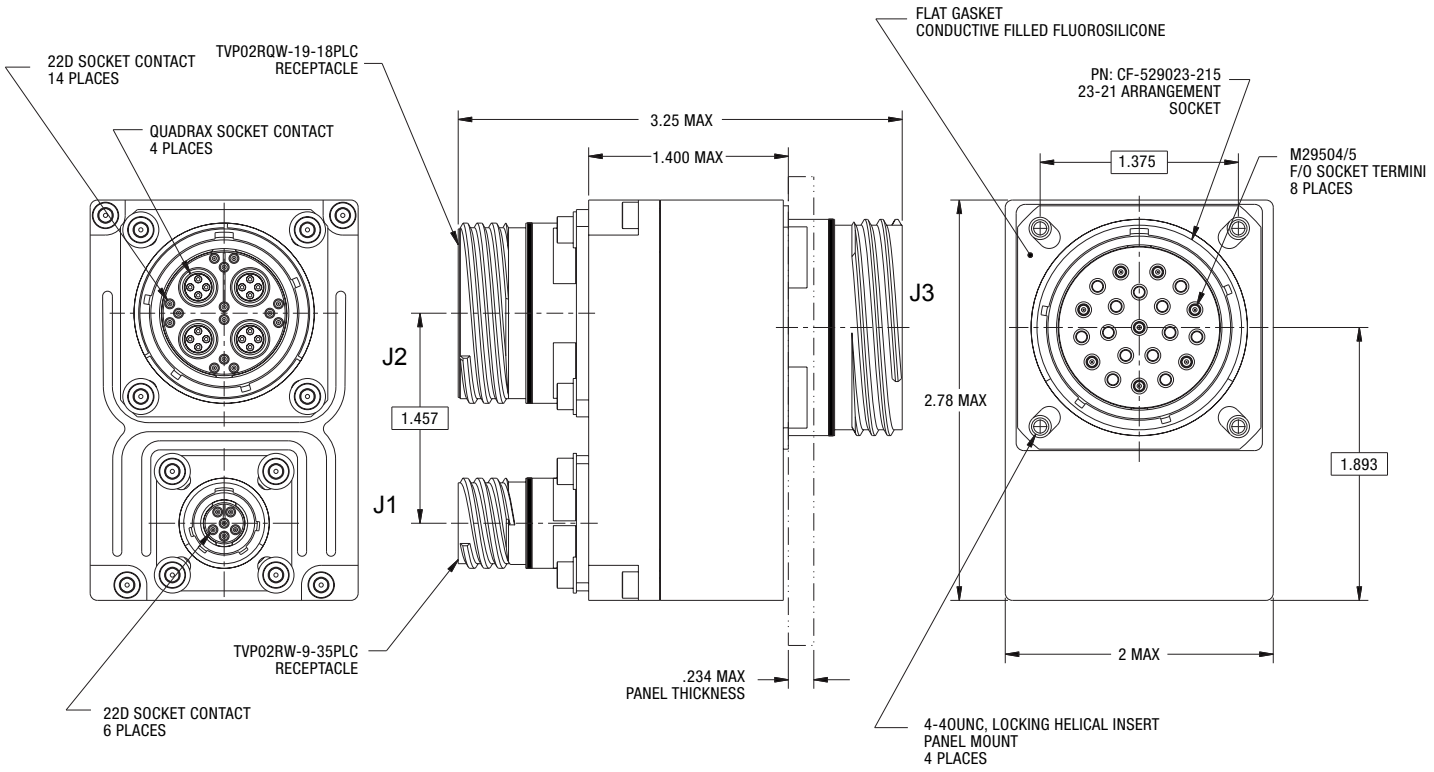
COPPER INTERFACE

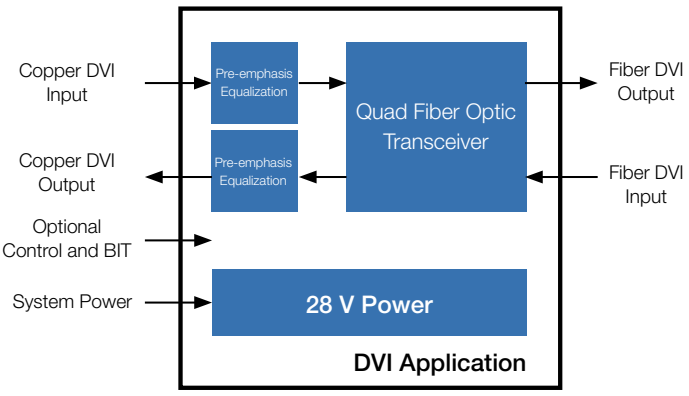
The Quadrax inputs can utilize Split-Pair Quadrax versus standard quadrax. The contacts are rated for 6.5Gbps versus 3.125Gbps

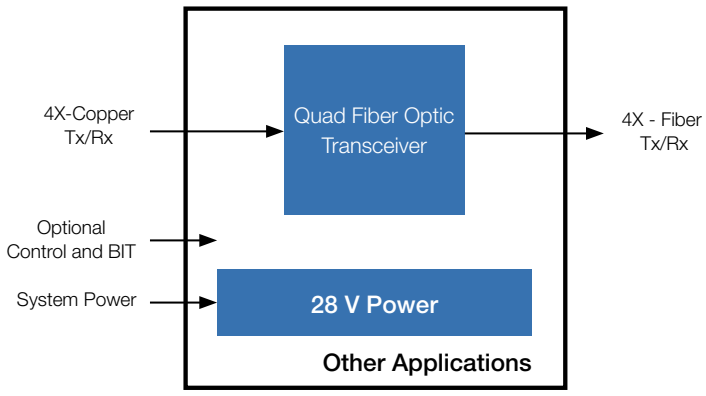
RUGGEDIZATION

The CTF-4G-4TXRX Media Converter is Natural convection cooled, so there is no fan. The operational temperature is -40°C to +85°C, and the converter is environmentally sealed.

Drawing







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How to Order

Ordering procedure is shown below using part number CTF-

1. Connector Type	2. Material	3. Quadrax Contact	4. Finish	5. Shell Style	6. Copper DVI Keying	7. Power Connector Keying	8. Fiber Connector Keying
CTF	-5	Q	Z	0	-A	B	C

Step 1. Connector Type

	Designates
CTF	Copper to Fiber Media Conversion Family

Step 2. Select a Material

	Designates
-5	Aluminum Shell
-6	Composite Shell
-8	Stainless Steel Shell

Step 3. Quadrax Configuration

	Designates
Q	3.125 GB Quadrax Sockets for copper DVI inputs and outputs
S	6.5 GB Split-Pair Quadrax Sockets

Step 4. Select a Finish

	Designates
T	Aluminum Durmalon
Z	Aluminum Black Zinc Nickel
F	Aluminum Electroless Nickel
M	Composite Electroless Nickel
W	Aluminum OD Cad
J	Composite OD Cad
L	Stainless Steel Electrodeposited Nickel
Y	Stainless Steel Passivated

Step 5. Select a Shell Style

	Designates
0	Wall Mount

Step 6. Select Copper DVI Connector Keying
(IAW MIL-DTL-38999)

	Designates
N	N
A	A
B	B
C	C
D	D
E	E

Step 7. Select Power Connector Keying
(IAW MIL-DTL-38999)

	Designates
N	N
A	A
B	B
C	C
D	D
E	E

Step 8. Select Fiber Connector Keying
(IAW MIL-DTL-38999)

	Designates
N	N
A	A
B	B
C	C
D	D
E	E

Available Test Equipment

Part Number	Description
CF-901201-007	LC Fiber Optic Test Cable for D38999 Connector
CA-628485-A42	Power Test Cable for D38999 Power Connector
CA-628485-A43	High Speed Copper SMA Cable for D38999 Data Connector

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Specifications

Absolute Maximum Ratings
Stress beyond the values stated below may cause permanent damage to the device.

Parameter	Symbol	Min	Max	Unit	Notes
Storage temperature	Tst	-55	+125	°C	-
Soldering temperature	Tsol	-	230	°C	-
Soldering Time	tsol	-	60	s	-
Supply voltage range	V_{CCTx}, V_{CCRx}	-0.3	+4.0	V	-
Signal pins voltage range	V_{pin}	$V_{.EEX}$-0.3	$V_{.ccx.}$+0.3	V	-
Differential input voltage	ΔV_{in}	-	1.2	V	-
Junction temperature	Tj	-	130	°C	-
ESD resistance voltage	ESD	-	1	KV	-

Module Specifications-General

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Supply voltage	V_{ccTx}, V_{CCRx}	3.0	3.3	3.6	V	-
Supply voltage noise	N_{vccx}	-	-	100	mV	-
Supply current (Tx + Rx)	Icc	-	275	300	mA	1
Power consumption (Tx + Rx)	P	-	900	1000	mW	1
Data Rate	B	0.001	2.5	3.125	Gbps	-
Operating temperature	Top	-40	-	+85	°C	2

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Module Specifications-Electrical

Parameter		Symbol	Min	Typ	Max	Unit	Notes
Number of TX or Rx channels		Nch	2	-	4	-	-
Transmitter (one channel)							
Input voltage range		VIN	V.EE.+ 0.825		V.cc.+0.2	V	
Differential input voltage		VINpp	100	-	950	mV	-
Input impedance		ZIN	80	100	120	Ω	-
Input capacitance (each input)		CIN	1.0	1.3	1.6	pF	-
Digital inputs	High	Vhigh	0.7xVcc	-	V.cc.+0.3	V	
	Low	Vlow	V.EE.-0.3		0.3xVcc	V	
Tx supply current		IccTx	-	150	160	mA	-
Receiver (one channel)							
Differential output voltage		VOUTp	100	250	350	mV	-
Output impedance		Zout	80	100	120	Ω	-
Output CML drive current		Io	-	12	-	mA	
Average proportional photocurrent output		Iovg	0	-	160	µA	1.2
Total jitter receiver		TjRx	-	60	150	ps	-
Rise/Fall Time		TR RX, Tf Rx	-	80	150	ps	3
Rx supply current		IccRx	-	125	140	mA	-

Module Specifications-Optical

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmitter (one channel)						
Center wavelength	λc	840	850	860	nm	-
Spectral width-rms	Δλ	-	-	0.85	nm	-
Core diameter of the Tx optical fiber pigtail	Dc	50	62.5	-	µm	-
Optical output power (average)	Pout	-5	-3	+1	dBm	1,2,3
Optical output power variation over the specified temperature range	ΔPout	-	0.5	1	dB	3,4
Optical modulation amplitude	OMA_{Tx}	650	-	-	µW	-
Optical extinction ratio	E_R	7.0	9.0	-	dB	-
Relative intensity Noise	RIN	-	-	-117	dB/Hz	-
Total jitter		-	60	150	ps	-
Rise/Fall time	τR, τF	-	80	150	ps	5
Receiver (one channel)						
Center wavelength	λc	760	850	860	nm	-
Spectral width-rms	Δλ	-	-	1	nm	-
Core diameter of the Rx optical fiber pigtail	Dc	50	-	62.5	µm	-
Optical sensitivity	Pin	-21	-19	-17	dBm	6
Optical modulation amplitude	OMA_{RX}	-	-	-	µW	-
Optical return loss	ORL	-30	-	-	dB	-

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AMPHENOL INTEGRATED ELECTRONIC PRODUCTS RUGGEDIZATION DESIGN

Amphenol Aerospace

Overview

Amphenol integrated electronic products are designed and manufactured to our Ruggedization guidelines listed below. These guidelines ensure years of reliable operation in harsh environment applications where extreme operating temperatures, shock, vibration and corrosive atmospheres are regularly experienced

Temperature

- Operating Temperature - Thermal Cycles between -40°C and 85°C while device is operating
- Temperature is measured at chassis housing or card edge
- Storage Temperature - Thermal Cycles between -55°C and 125°C

Humidity

- Operating Humidity – Humidity cycle between 0-100% non-condensing humidity while device is operating
- Storage Humidity – Humidity cycle between 0-100% condensing humidity

Sealing

- Sealing can be optionally provided at the MIL-DTL-38999 interface with up to 10-5 cc/sec performance

Fluids Susceptibility

- MIL-DTL-38999 receptacle interface per EIA-364-10E

Vibration & Shock

- Sine Vibration – 10 g Peak, 5-2,000Hz
  -Based on a sine sweep duration of 10 minutes per axis in each of three mutually perpendicular axes. May be displacement limited from 5 to 44 Hz, depending on specific test.
- Random Vibration - 0.005@5Hz, 0.1@15Hz, 0.1@2,000Hz
  -60 minutes per axis, in each of three mutually perpendicular axes.
- 40 G Peak Shock Cycle
  -Three hits in each axis, both directions, ½ sine and terminal-peak saw tooth, Total 36 hits.

Altitude

- -1,500 to 60,000 ft Altitude Testing w/ Rapid Depressurization

Electromagnetic Compatibility

- Designed to comply with MIL-STD-461E

Printed Circuit Board Assemblies

- Conformal Coat
  -Amphenol performs Conformal Coating to both sides of printed circuit board assemblies using HUMISEAL IB31 in accordance with IPC-610, Class 3.
- Printed Circuit Board Rigidity
  -Amphenol printed circuit boards are fabricated in accordance with IPC-6012, Class 3.
- Printed Circuit Board Fabrication
  -Amphenol printed circuit boards acceptance criteria is in accordance with IPC-610, Class 3.

Reliability Predictions (MTBF)

Amphenol can perform Mean Time Between Failure (MTBF) reliability analysis in full compliance with MIL-HDBK-217F-1 Parts Count Prediction and MIL-HDBK-217F-1 Parts Stress Analysis Prediction. We can also perform reliability analyses in full compliance of ANSI/VITA 51.1 if it is required or preferred over the later method.

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OCEAN CHIPS
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